CLASS 527, SYNTHETIC RESINS OR NATURAL RUBBERS -- PART OF THE CLASS 520 SERIES

SECTION I - CLASS DEFINITION

Subject to all applicable provisions and limitations of the Class 520 Class Definition, this class provides for solid synthetic resins derived from at least one saturated material and from

A. a reactant which is a cellular material derived from a plant or animal source (other than diatomaceous earth, blood, cotton, or farinaceous flour),

B. a reactant which is a protein or biologically active polypeptide,

C. a reactant which is a carbohydrate or derivation thereof,

D. a lignin, tannin, or derivative thereof,

E. a reactant which is coal or bituminous material, an extract or derivative thereof, or a fatty still residue,

F. a reactant which is a natural resin or derivative thereof (other than tall oil or a derivative thereof).

SUBCLASSES

100 FROM REACTANT WHICH IS A CELLULAR MATERIAL DERIVED FROM PLANT OR ANIMAL SOURCE AND IS OTHER THAN DIATOMACEOUS EARTH, BLOOD, COTTON, OR FARINACEOUS FLOUR, E.G., CITRUS PULP, WALNUT SHELL FLOUR, ETC.:
This subclass is indented under subclass 1. Subject matter under Class 520, ... wherein a solid polymer is derived from a reactant which is a plant or animal material which retains at least some of the original cell structure, e.g., citrus pulp, wood, flour, etc., and excluding diatomaceous earth or fossilized matter (e.g., chalk, etc.), blood, cotton, or farinaceous flour or meal and a reactant which an ethylenic monomer, SICP or SPFI; or process of preparing said polymer.

(1) Note. Soybean flour or meal is included herein, also peanut and cottonseed meal.

(2) Note. Included herein are fibrous materials such as bark obtained from woody plants (e.g., mimosa bark, cork, etc.).

SEE OR SEARCH THIS CLASS, SUBCLASS:
103+, for mimosa wood as a reactant.

SEE OR SEARCH CLASS:
524, Synthetic Resins or Natural Rubbers, subclass 9 for the definition of "cellular material derived from plant or animal source".

101 Animal derived, e.g., hair, leather, horn, etc.:
This subclass is indented under subclass 100. Subject matter wherein the reactant is a cellular material derived from an animal source, e.g., hair, leather, fur, horn, etc.

102 With ethylenic reactant:
This subclass is indented under subclass 101. Subject matter wherein there is at least one ethylenic reactant in addition to the animal derived cellular material.

SEE OR SEARCH CLASS:
526, Synthetic Resins or Natural Rubbers, subclass 238.1 for homo- and copolymers of ethylenic monomers having protein or biologically active polypeptide chemically bonded thereto.

103 Wood or wood cellulose fiber or flour:
This subclass is indented under subclass 100. Subject matter wherein the cellular material derived from a plant is wood or wood cellulose (fiber or flour).

(1) Note. Included herein is raw lignocellulose which is deemed to be wood for the purpose of this subclass.

(2) Note. Included herein as reactants are (e.g., wood fibers, quebracho wood, etc.).

SEE OR SEARCH CLASS:
526, Synthetic Resins or Natural Rubbers, subclass 238.21 for homo- and copolymers or ethylenic monomers hav-

ing cellulose or a derivative chemically bonded thereto.

105 With aldehyde or derivative:
This subclass is indented under subclass 103. Subject matter wherein there is at least one reactant which is an aldehyde or derivative in addition to the wood or wood cellulose (fiber or flour) reactant.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for a definition of the term "aldehyde derivative".

200 FROM PROTEIN OR BIOLOGICALLY ACTIVE POLYPEPTIDE REACTANT:
This subclass is indented under subclass 1. Subject matter under Class 520, ... wherein a solid polymer is derived from a protein or biologically active polypeptide reactant and an ethylenic reactant, SICP or SPFI; or process of preparing said polymer.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for the definition of "protein" and "biologically active polypeptide".
435, Chemistry: Molecular Biology and Microbiology, appropriate subclasses for making and using enzymes.

201 With ethylenically unsaturated reactant:
This subclass is indented under subclass 200. Subject matter wherein an ethylenically unsaturated reactant is additionally present.

SEE OR SEARCH CLASS:
526, Synthetic Resins or Natural Rubbers, subclass 238.1 for homo- and copolymers of ethylenic monomers having protein or biologically active polypeptide chemically bonded thereto.

202 Polymerization in the presence of a specified material:
This subclass is indented under subclass 201. Subject matter wherein the reaction system contains a specified material at the time of polymerization.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for a definition of the term "specified material".

203 With nonethylenically unsaturated reactant:
This subclass is indented under subclass 201. Subject matter wherein a third reactant not having ethylenic unsaturation is present.

(1) Note. The reactant not having ethylenic unsaturation can be added or present at any time prior to solid polymer formation (e.g., protein and halogen) reacted to yield halogenated protein followed by reaction with unsaturated monomer to yield solid polymer.

SEE OR SEARCH CLASS:
525, Synthetic Resins or Natural Rubbers, subclass 54.1 for a solid polymer chemically treated with a protein or biologically active polypeptide.

204 With N=C=X reactant wherein X is chalcogen:
This subclass is indented under subclass 200. Subject matter wherein a N=C=C reactant is additionally present.

(1) Note. X is a chalcogen atom (O, S, Se, or Te).

205 With aldehyde or derivative or ketone reactant:
This subclass is indented under subclass 200. Subject matter wherein an aldehyde or derivative is additionally present.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for a definition of the term "aldehyde derivative".

206 With phenolic reactant:
This subclass is indented under subclass 205. Subject matter wherein a phenolic reactant is additionally present.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for a defintiion of the term "phenolic reactant".

207 With carboxylic acid or derivative reactant:
This subclass is indented under subclass 200. Subject matter wherein a carboxylic acid or derivative is additionally present.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for a definition of the term "carboxylic acid or derivative".

300 FROM CARBOHYDRATE OR DERIVATIVE AS A REACTANT:
This subclass is indented under subclass 1. Subject matter under Class 520, ... wherein a solid polymer is derived from a carbohydrate or derivative reactant and an ethylenic reactant, a SICP, or a SPFI; or process of preparing said polymer.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for the definition of "carbohydrate derivative".

301 With N=C=X reactant wherein X is chalcogen:
This subclass is indented under subclass 300. Subject matter wherein a N=C=X reactant is present in addition to the carbohydrate or derivative.

(1) Note. X is a chalcogen atom (O, S, Se, or Te).

SEE OR SEARCH CLASS:
525, Synthetic Resins or Natural Rubbers, subclass 54.22 for N=C=X derived solid polymer chemically treated with carbohydrate or derivative.

302 Oxyalkylated carbohydrate:
This subclass is indented under subclass 301. Subject matter wherein the carbohydrate or derivative is oxyalkylated (e.g., treated with ethylene oxide, etc.).

303 With phenolic reactant:
This subclass is indented under subclass 300. Subject matter wherein a phenolic reactant is present in addition to the carbohydrate or derivative.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for the definition of the term "phenolic reactant"

304 With ketone reactant other than as a ketose:
This subclass is indented under subclass 300. Subject matter wherein a ketone reactant (excluding a ketose) is present in addition to the carbohydrate or derivative.

(1) Note. For purposes of the instant subclass, a ketose carbohydrate (e.g., ketohexoses such as sorbose, fructose, etc.) and ketopentoses such as arabinulose, ribulose and xylulose, etc., must be accompanied by an additional noncarbohydrate ketone (e.g., acetone, etc.

305 With aldehyde or derivative as a reactant other than as an aldose:
This subclass is indented under subclass 300. Subject matter wherein an aldehyde or derivative (other than an aldose) is present in addition to the carbohydrate or derivative.

(1) Note. The aldose sugars are carbohydrates, but their presence alone is not sufficient for this subclass since another aldehyde must be present.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for a definition of the terms "aldehyde" and "aldehyde derivative".

306 Ethylenically unsaturated reactant:
This subclass is indented under subclass 305. Subject matter wherein there is at least one ethylenically unsaturated reactant.

SEE OR SEARCH CLASS:
526, Synthetic Resins or Natural Rubbers, subclass 238.2 for solid polymer produced from ethylenic monomer only wherein at least one monomer has carbohydrate or derivative chemically bonded thereto.

309 Nitrogen-containing reactant:
This subclass is indented under subclass 305. Subject matter wherein there is at least one nitrogen-containing reactant.

310 With phosphorus-containing reactant:
This subclass is indented under subclass 300. Subject matter wherein a phosporus-containing reactant is present in addition to the carbohydrate or derivative.

311 With di- or higher ester of polycarboxylic acid; or with polycarboxylic acid or derivative and a compound containing two or more hydroxyl groups or salts thereof as reactants:
This subclass is indented under subclass 300. Subject matter wherein in addition to the carbohydrate or derivative there is a reactant system comprising a di- or higher ester of polycarboxylic acid or a carboxylic acid or derivative admixed with a polyhydroxyl compound.

(1) Note. When the additional reactant is a polyol-polycarboxylic acid system, the polyol, polycarboxylic acid, and carbohydrate can be admixed and reacted in any sequence or simultaneously.

312 With nitrogen-containing reactant:
This subclass is indented under subclass 300. Subject matter wherein a nitrogen-containing reactant is present in addition to the carbohydrate or derivative.

(1) Note. Included herein are, for example, graft copolymers of starch and acrylonitrile, etc.

313 Ethylenically unsaturated reactant:
This subclass is indented under subclass 300. Subject matter wherein an ethylenically unsaturated reactant is present.

(1) Note. The ethylenic unsaturated reactant can be either a carbohydrate derivative (e.g., cellulose acrylate) or another unsaturated reactant.

SEE OR SEARCH CLASS:
526, Synthetic Resins or Natural Rubbers, subclasses 238.2+ for solid polymers produced from ethylenic monomers only wherein there is a monomer having carbohydrate or derivative chemically bonded thereto.

314 Unsaturated carboxylic acid or derivative reactant:
This subclass is indented under subclass 313. Subject matter wherein the ethylenically unsaturated reactant is a carboxylic acid or derivative.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for a definition of the term “carboxylic acid or derivative”.

315 With heterocyclic reactant other than carbohydrate:
This subclass is indented under subclass 313. Subject matter wherein there is a heterocyclic reactant in addition to the ethylenically unsaturated reactant and wherein the heterocyclic reactant is a noncarbohydrate containing material.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for a definition of the term “heterocyclic”.

400 FROM LIGNIN, TANNIN, OR DERIVATIVE REACTANT:
This subclass is indented under subclass 1. Subject matter under Class 520, ... wherein a solid polymer is derived from lignin, tannin, or a derivative as a reactant and an ethylenic monomer, SPFI, or SICP; or process of preparing said polymer.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, for a definition of the term “heterocyclic”.
560, Organic Compounds, subclass 68 for a definition of “tannin and derivative thereof”.

401 With N=C=X reactant wherein X is chalcogen; or with polyepoxide reactant:
This subclass is indented under subclass 400. Subject matter wherein a N=C=X reactant or polyepoxide reactant is present in addition to the lignin, tannin, or derivative.

(1) Note. X is chalcogen (i.e., O, S, Se, Te).

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for a definition of "polyepoxide".

403 With phenolic reactant:
This subclass is indented under subclass 400. Subject matter wherein a phenolic reactant is present in addition to lignin, tannin, or derivative.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for a definition of "phenolic reactant".

500 FROM COAL OR BITUMINOUS MATERIAL, EXTRACT OR DERIVATIVE THEREOF, OR FATTY STILL RESIDUE REACTANT:
This subclass is indented under subclass 1. Subject matter under Class 520, ... wherein a solid polymer is derived from coal or bituminous material, extract or derivative thereof or fatty still residue by means of chemical reaction with an ethylenic reactant, or SICP or SPFI; or process of preparing said polymer.

(1) Note. In the absence of specific disclosure to the contrary, the coal, bituminous material, etc., will be treated as a nonethylenically unsaturated material.

SEE OR SEARCH CLASS:
524, Synthetic Resins or Natural Rubbers, Glossary, subclass 59 and 705 for the definition of the terms coal, bituminous material, extract or derivative thereof and fatty still residue.

501 With polyepoxide reactant; or with N=C=X reactant wherein X is chalcogen:
This subclass is indented under subclass 500. Subject matter wherein a polyepoxide reactant or N=C=X reactant is additionally present.

(1) Note. X is chalcogen (O, S, Se, Te).

SEE OR SEARCH CLASS:
525, Synthetic Resins or Natural Rubbers, subclass 54.5 for the chemical combination of a solid polyepoxide resin with coal, bituminous material, extract, or derivative thereof or fatty still residue.

503 With phenolic or aldehyde or derivative reactant:
This subclass is indented under subclass 500. Subject matter wherein a phenolic reactant or aldehyde or derivative reactant is additionally present.

SEE OR SEARCH CLASS:
525, Synthetic Resins or Natural Rubbers, Glossary, for a definition of the terms "phenolic reactant", "aldehyde" and "aldehyde derivative".

600 FROM NATURAL RESIN OR DERIVATIVE REACTANT EXCLUDING TALL OIL OR DERIVATIVE:
This subclass is indented under subclass 1. Subject matter under Class 520, ... wherein a solid polymer is derived from a reactant, which is a natural resin or derivative excluding tall oil or derivatives, by means of chemical reaction with an ethylenic reactant, a SICP or SPFI; or process of preparing said polymer.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for the definition of the terms "natural resin", "natural resin derivative", and "fatty acid" which latter definition includes a discussion of tall oil and its derivatives.
525, Synthetic Resins or Natural Rubbers, subclasses 54.4+ for the definition natural resins (since they are presumed to possess ethylenic unsaturation) with a preformed SICP (liquid or solid).

526, Synthetic Resins or Natural Rubbers, subclass 238.3 for polymers derived solely from ethylenic reactants at least one of which is a natural resin.

601 With polyepoxide reactant:
This subclass is indented under subclass 600. Subject matter wherein a polyepoxide reactant is present in addition to said natural resin or derivative.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for a definition of "polyepoxide".

602 With phenolic reactant:
This subclass is indented under subclass 600. Subject matter wherein a phenolic reactant is present in addition to said natural resin or derivative.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for a definition of the term "phenolic reactant"

603 With ethylenically unsaturated reactant:
This subclass is indented under subclass 602. Subject matter wherein an ethylenically unsaturated reactant is present in addition to said phenolic reactant and said natural resin or derivative.

604 With polycarboxylic acid or derivative and a compound having two or more hydroxyl groups as reactants:
This subclass is indented under subclass 600. Subject matter wherein a polycarboxylic acid or derivative and a polyhydroxyl compound or salt thereof are present in addition to said natural resin or derivative.

(1) Note. Said polycarboxylic acid and polyhydroxyl compound can be prereacted prior to admixture with the natural resin or derivative.

SEE OR SEARCH CLASS:
520, Synthetic Resins or Natural Rubbers, Glossary, for a definition of the term "carboxylic acid or derivative".

525, Synthetic Resins or Natural Rubbers, subclasses 10+ for a solid polyester reacted with a natural resin or derivative.

END